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ABSTRACT

The study of teachers as decision-makers is a recent paradigm in educational research. This decision-making approach considers the teacher as an active professional engaged in various decision-making activities prior to and during instruction. This paper describes a naturalistic research design employed in a recent dissertation that investigated factors affecting teachers' diagnostic decisions. The objective of the paper is to present this research design as an effective alternative or complement to quasi-experimental designs in the study of factors affecting teachers' decision-making. The research design employed the in-depth and interpretative focus of a multiple case study approach and methodological triangulation within naturalistic settings. Specifically, the basic design of the study was a fixed multiple case study investigation of two experimental groups and no control groups, utilizing repeated measures within a multi-method approach to identify differences among groups rather than any effects of treatment. The multiple case studies employed in this study approach were extremely effective in providing a rich source of qualitative and quantitative data. In addition, the safeguards built into the design ensured the trustworthiness of this data. (Author)

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A NATURALISTIC RESEARCH DESIGN FOR THE STUDY OF FACTORS AFFECTING TEACHERS' DECISION-MAKING

by

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ABSTRACT

The study of teachers as decision-makers is a recent paradigm in educational research (see Borko, Shevelson, and Stern, 1981). This decision-making approach considers the teacher as an active professional engaged in various decision-making activities prior to and during instruction. This paper describes a naturalistic research design employed in a recent dissertation that investigated factors affecting teachers' diagnostic decisions. The objective of the paper is to present this research design as an effective alternative or complement to quasi-experimental designs in the study of factors affecting teachers' decision-making.

The research design described within this paper employed the in-depth and interpretative focus of a multiple case study approach and methodological triangulation within naturalistic settings. Specifically, the basic design of the study was a fixed multiple case study investigation of two experimental groups and no control groups, utilizing repeated measures within a multi-method approach to identify differences among groups rather than any affects of treatment. The multiple case studies employed in this study approach were extremely effective in providing a rich source of qualitative and quantitative data. In addition, the safeguards built into the design ensured the trustworthiness of this data.

Introduction

Recent approaches to research in teaching have focused on teaching and diagnosing as decision-making processes. For many years research focused on the paradigm described by Gage (1963) as the "criterion of effectiveness" paradigm. This research was expected to correlate teacher characteristics with student achievement and satisfaction. This paradigm was slowly replaced by the "teaching process" paradigm that focused on correlations between measures of teacher behaviors and student achievement. Due to conceptual limitation of these research paradigms, there has been a shift toward the "teacher as decision maker" paradigm. This model considers the teacher as an active, intelligent professional who sets goals, seeks information about students and curricula in the context of these goals, who formulates hypotheses on the basis of this information and their beliefs, and who selects among alternative methods of teaching and diagnosing. Borko, Shavelson and Stein (1981) describe this new perspective in research on teachers in relation to earlier paradigms:

> This decision making approach incorporates its predecessors in that teacher characteristics are expected to influence the information teachers seek in making decisions and the way they use this information in choosing and carrying out an instructional approach (p. 451).

Research studies that have investigated the decision-making process and factors affecting decisions have a vital role in clarifying the information that teachers consider, how the teachers weight this

information, and how they make determinations about student capabilities and instruction. These research studies also illuminate factors which influence decision-making and many account for teacher differences and potential biases in decision-making. Studies on teacher expectation effects (Brown, 1976; Finn, 1972; Cooper, 1979) point out that teachers use information from diagnostic tests and daily performances in formulating diagnoses. Yet, recent studies on teacher diagnostic decision-making (Weinshank, 1981; Hoffmeyer, 1981; Gil, 1980; Koech, Note 1) have suggested that teachers do derive different diagnoses for the same student. Howards (1980) expresses the concern of many educators regarding the seriousness of incorrect decisions made by a teacher about students' capabilities:

> Misdiagnosis in education is as serious and detrimental as misdiagnosis in medicine or psychology, for in all instances the patient or student is misunderstood and receives the wrong prescription or treatment (p. 48).

In schools, misdiagnosis may result in students being placed in the wrong instructional group, being given unnecessary or inadequate instruction, and being subjected to inaccurate teacher expectations. Research into the bases and processes of teacher decision-making will illuminate factors which influence the quality of the decision-making.

Unfortunately, researchers interested in understanding the teacher decision-making process are confronted with the same methodological dilemma as researchers employing earlier paradigms. Leacock (1971) described this dilemma in reference to designs investigating the teaching/learning process:

> The need for evaluation and comparison of 'better'

> or 'worse' teaching and learning situations suggests that data must be codified and quantified. However, the teaching process is still not sufficiently understood for us to be able to select its significant features for quantification and comparison (p. 169).

The process whereby teachers make decisions and the range of factors which influence these decisions are also inadequately understood for selection of significant features for quantification and comparison. However, most of the small body of recent studies employing the paradigm of teachers as decision-makers has been focused and controlled rather than exploratory within naturalistic settings. No ethnographies of teacher decision-making have been done. Some of the present studies investigated the information teachers use (Russo, 1979), specific characteristics of the decision-making process (Weinshank, 1981), or relationship between decision-making involvement and quality of implementation of remedial reading services (Sieger, 1980). Several studies investigated the process and product of diagnostic decision-making (Gil, 1980, 1981), and two other studies (Borko, 1979; Russo, 1979) focused on specific factors which influenced teachers' decisions. None of these studies explored all aspects of instructional or diagnostic decision-making or investigated the potential breadth of factors which influence teachers.

The bases for data collection in these studies were also controlled and narrow considering the present state of understanding of teacher decision-making. Teacher diagnostic or instructional decision-making in referenced simulated cases is not necessarily the same. The

teachers' attention is restricted by information presented and emotive, interactional factors are eliminated. Gil (1980) stated that the teachers in his study were in the classroom and lab setting. However, his study and others (Stratoudakis, 1981; Weinshank, 1981; Hoffmeyer, 1981) concluded that teachers' decision-making is random, haphazard, unsystematic, or atheoretical. The model of teacher as intelligent decision-maker is not supported by the conclusions of the studies which assumed that perspective.

One source of the problem may be the model itself. Broko, Shavelson, and Stern (1981) pointed out that the applicability of the model to the "interactive" component of teaching is being debated since "the teacher may not have time to reflect before acting" (p. 451). Yet, the design of the studies cited above was more similar to the "preactive" component of teaching, or teaching in an empty classroom. One would have anticipated a better fit of the research paradigm.

The purpose of this paper is not to criticize existing research on teacher decision-making or the model of teacher as rational decision-maker, per se. Although the evidence is contradictory and with inconsistencies, these have made a contribution to increasing our understanding of some aspects of the decision-making process and factors which influence it. Rather, the purposes of this paper are to suggest the advantages of an alternative research design in this area of research--a multiple case study design employing methodological triangulation--and to provide an example of an effective multiple case study, multi-method design.

Rationale for a Multiple Case Study and Multi-method Design

Descriptive research designs are particularly suited to studies where less control over variables is possible or desirable, as was the situation in this research study. Descriptive studies can, by their design, be effectively used to explore and describe conditions which exist at a specific time.

Among the diverse types of descriptive research, the case study approach is especially applicable to the study of factors influencing teachers' decision-making or the decision-making process itself. Within the case study, the investigator examines the individual unit or area in depth. The basic approach of the case study is to deal with all pertinent aspects of the selected person, area, or situation. This in-depth, holistic nature of case studies is the greatest advantage of this research design. Ary, Jacobson and Razavieh (1972) suggest the implications of the use of a case study approach.

> Case studies often provide an opportunity for an investigator to develop insights into basic aspects of human behavior. The intensive probing characteristic of this technique may lead to the discovery of previously unsuspected relationships (p. 287).

Although case studies have been characterized as a type of descriptive research, they also have much in common with other types of research, such as historical and developmental. As Frazier (1973) explained, a case study "has some characteristics of an historical approach in the sense that it dealt with past data and also has some characteristics of a

descriptive study in that it does use much data to describe a particular situation" (p. 127).

Case studies are also similar to genetic (developmental) investigations of an individual. Both approaches have been used to investigate types of growth and development, but the direction of the focus is different. In the case study the direction is backward (historical) whereas the focus in the genetic research is forward as growth takes place.

Case study procedures have been used extensively in a wide range of fields, such as law, medicine, psychology and psychiatry, education, counseling and guidance, political science and journalism. These case studies have varied in the procedures used and the purposes for which they were done. Regardless of the diverse purposes for which the case studies were done, the case study design has had specific characteristics. First, case studies have been in-depth investigations confined to one or just a few subjects, but in looking at that subject(s), "the focus is exceedingly broad in the types and quantities of variables which are observed, and as many of the interrelationships are studied as possible" (Asher, 1976, p. 148). All types of information about the individual which is considered to be relevant is intensively examined.

A second characteristic of case studies which is related to the in-depth focus of case studies is their holistic nature. Doby (1967) described this integral nature of case studies in the following words:

> The case study is a way of ordering social data with the view toward preserving the unitary character of whatever is being studied. It merely selects and treats some socially defined object or act as a 'whole.' This whole constitutes the case unit and the case unit may involve any level or base of abstraction. The case may be a person, an episode in a person's life, a group, a concrete set of relationships, a specific process, or a culture.
>
> The wholeness or unitary character ascribed to this concrete case is a constructed wholeness. There are no concrete limits to any object or act. The limits imposed reflect the perspective and theoretical interest of the observer
>
> Whatever unit has been abstracted out is temporarily and spatially bound. It has a particular historical development and is a unique configuration (pp. 240-241).

A third characteristic common to case studies is their use of triangulation. Cohen and Manion (1980) discussed six types of triangulation: time, space, combined levels, theoretical, investigator, and methodological. These are described below:

1. Time triangulation: this type attempts to take into consideration the factors of change and process by utilising cross-sectional and longitudinal designs.

2. Space triangulation: this type attempts to overcome the parochialism of studies conducted in the same country or within the same subculture by making use of cross-cultural techniques.

3. Combined levels of triangulation: this type uses more than one level of analysis from the three principal levels used in the social sciences, namely, the individual level, the interactive level (groups), and the level of collectivities (organisational, cultural or societal).

4. Theoretical triangulation: this type draws upon alternative or competing theories in preference to utilising one viewpoint only.

5. Investigator triangulation: this type engages more than one observer.

6. Methodological triangulation: this type uses either (a) the same method on different occasions, or (b) different methods on the same object of study (p. 211).

Case studies have employed methodological triangulation and, potentially, any or all other forms of triangulation as well. The multi-method procedures have been utilized in a case study in order to obtain all possible information about the case.

In case studies this use of methodological triangulation frequently has meant the use of both qualitative and quantitative data pertinent to the case and the use of theoretical triangulation. Qualitative data collection has been employed in ethnographic and field studies within anthropology and sociology and has been represented within phenomenology, symbolic interactionism, naturalist behaviorism, ethnomethodology and ecological psychology. The integrating theme of all of these perspectives was described by Patton (1980) and Bogdan and Taylor (1975) as the doctrine of "verstehen." This "verstehen" tradition stresses that man can be understood in a manner that other objects cannot, and that there is a human capacity to know and understand others through sympathetic introspection and reflection from detailed description and observation. This tradition, according to Patton, stressed understanding focusing on the meaning of human behavior and the context of social interactions. Bogdan and Taylor traced "verstehen" to Max Weber's phenomenological perspective. They suggested, "The phenomenologist is concerned with understanding human behavior from

the actor's own frame of reference . . . [and] examines how the world is experienced" (Bogdan and Taylor, 1975, p. 8).

Bogdan and Taylor (1975) and others (Smelser, 1976; Patton, 1980) contrast this phenomenological perspective with twentieth century positivism exemplified by August Compte and Emile Durkheim. The positivist seeks facts or causes of social phenomena without interest or regard for the subjective states of individuals, be they researcher's or subject's. "The positivist searches for 'facts' and causes through methods such as survey questionnaires, inventories and demographic analysis which produce quantitative data and which allow him or her to statistically prove relationships between operationally defined variables" (Bogdan and Taylor, 1975, p. 2).

The positivists and phenomenologists approach different problems and seek different answers because they have different assumptions and goals as well as different theories and perspectives. As a result, their research studies have typically demanded different methodologies. A case study is not confined, however, to one or the other of these perspectives; the case study investigator may use both theoretical perspectives and their corresponding methodologies in his attempt to obtain a holistic perspective of the case he is investigating.

Case study designs are employed for diverse reasons. The scientific value of case studies, according to Asher, is "for the development of hypotheses which can be tested with greater rigor with standard observational systems on larger numbers of representative groups" (Asher, 1976, p. 149). But the use of a single case study

for hypothesis generation can be problematic. For example, while a well done single case study may uncover most of the causal antecedents, they may be buried in the mass of information collected so that they are impossible to separate from the irrelevant variables. The use of several case studies allows the investigator to contrast and compare across the cases. The generation of hypotheses is facilitated through this process. The single case in contrast with others can provide insights beyond that of the single case studied alone. Asher (1976) suggested that,

> A single individual exhibiting a particular problem and set of characteristics may appear to be a chance or random case. Other individuals exhibiting similar problems can be studied to see whether there are similarities. The researcher can attempt to draw a parallel between cases. Perhaps it is possible to identify two individuals who are alike in relevant characteristics. The first case may not be unique; there may be a common denominator. By comparing and contrasting cases, the researcher acquires more information. Perhaps a new concept is suggested.
>
> The value of a case study is strengthened if a similar case is found, but the usefulness of a study does not rest on the identification of a similar case (p. 320).

The multiple case study approach used in this study clarified similarities and differences and aided in the generation of hypotheses for further research.

Case study designs also have their methodological weaknesses. The "opportunities for insight in a case study are also opportunities for subjectivity or even prejudice" (Ary, Jacobs and Razavieh, 1972, p. 287). The preconceptions of an investigator have operated in some studies to determine which behaviors were observed, which were ignored,

and how these were interpreted. Safeguards against subjectivity need to be taken. Criteria to assess the trustworthiness of the data have been suggested by Guba (Note 2) and in Guba and Lincoln (1981). Guba (Note 2) discussed four areas of trustworthiness in the scientific paradigm: internal validity, external validity, reliability and objectivity. He identified the corresponding areas in the naturalistic mode as credibility, fittingness, dependability and confirmability. Guba listed specific safeguards. In reference to naturalistic data, he stated:

> Inquiry can be affected by factor patternings,
> which produce effects of non-interpretability,
> to take account of which we,
> while doing the study, use prolonged engagement, persistent observation, and peer debriefing, do triangulation, collect referential adequacy materials, and do member checks,
> and after completing the study, establish structural corroboration or coherence, establish referential adequacy, and do member checks,
> in the hope that these actions will lead to credibility,
> and produce findings that are plausible.
>
> Inquiry can be affected by situational uniqueness,
> which produce effects of non-comparability,
> to take account of which we,
> while doing the study, collect thick descriptive data
> and do theoretical or purposive sampling,
> and after completing the study, develop thick descriptions,
> in the hope that these actions will lead to fittingness,
> and produce findings that are context-relevant.
>
> Inquiry can be affected by instrumental changes,
> which produce effects of non-comparability,
> to take account of which we,
> while doing the study, use overlap methods, use stepwise
> replication, and leave an audit trail,

> and after completing the study, do a <u>dependability audit</u>,
> in the hope that these actions will lead to dependability,
> and produce findings that are stable.
>
> Inquiry can be affected by investigator predilections,
> which produce an effect of bias,
> to take account of which we,
> while doing the study, do <u>triangulation</u> and <u>practice reflexivity</u> (leave audit trail)
> and after completing the study do a <u>confirmability audit</u>
> in the hope that these actions will lead to confirmability,
> and produce findings that are investigator-free
> (pp. 15-16; emphasis added).

Many of these safeguards were built into the design of the study described in this paper.

Another problem associated with case study designs, and particularly multiple case studies, relates to the analysis of data. There are large quantities of data collected, and there can be inconsistencies and contradictions within the data itself. Although valuable, the use of multiple methods of data collection from contrasting philosophical, epistemological and methodological traditions does increase the opportunities for these inconsistencies and contradictions. However, Kitwood (Note 3) has developed a method of analysis which structures the process and clarifies tasks which illuminate these inconsistencies so they can be more easily resolved. The qualitative technique that Kitwood developed was based on the utilization of eight distinct methods for gathering and analyzing data from tape-recorded interviews. These methods, described in Table 1, were also incorporated into this study.

TABLE 1

KITWOOD'S QUALITATIVE TECHNIQUES FOR ANALYSIS

Method 1: The Total Pattern of Choice
The frequency of choice of various items permits some surface generalisations about the participants, taken as a group. The most revealing analyses may be those of the least and most popular items.

Method 2: Similarities and Differences
Using the same technique as in Method 1, it is possible to investigate similarities and differences within the total sample of accounts according to some characteristic(s) of the participants such as age, sex, level of educational attainment etc.

Method 3: Grouping Items Together
It may be convenient for some purposes to fuse together categories that cover similar subject matter. For example, items 1, 5 and 14 in Box 10.2 relate to conflict; items 4, 7 and 15, to personal growth and change.

Box 10.2

Below are listed 15 types of situation which most people have been in at some time. Try to think of something that has happened in your life in the last year or so, or perhaps something that keeps on happening, which fits into each of the descriptions. Then choose the ten of them which deal with the things that seem to you to be most important, which cover your main interests and concerns, and the different parts of your life. When we meet we will talk together about the situations you have chosen. Try beforehand to remember as clearly as you can what happened, what you and others did, and how you yourself felt and thought. Be as definite as you can. If you like, write a few notes to help you keep the situation in mind.

1. When there was a misunderstanding between you and someone else (or several others) . . .
2. When you got on really well with people . . .
3. When you had to make an important decision . . .
4. When you discovered something new about yourself . . .
5. When you felt angry, annoyed or resentful . . .
6. When you did what was expected of you . . .
7. When your life changed direction in some way . . .
8. When you felt you had done something well . . .
9. When you were right on your own, with hardly anyone taking your side . . .
10. When you 'got away with it', or were not found out . . .
11. When you made a serious mistake . . .
12. When you felt afterwards that you had done right . . .
13. When you were disappointed with yourself . . .
14. When you had a serious clash or disagreement with another person . . .
15. When you began to take seriously something that had not mattered much to you before . . .

Source: Adapted from Kitwood

Method 4: Categorization of Content
The content of a particular item is inspected for the total sample and an attempt is then made to develop some categories into which all the material will fit. The analysis is most effective when two or more researchers work in collaboration, each initially proposing a category system independently and then exchanging views to negotiate a final category system.

Method 5: Tracing a Theme
This type of analysis transcends the rather artificial boundaries which the items themselves imply. It aims to collect as much data as possible relevant to a particular topic regardless of where it occurs in the interview material. The method is exacting because it requires very detailed knowledge of content and may entail going through taped interviews several times. Data so collected may be further analysed along the lines suggested in Method 4 above.

Method 6: The Study of Omissions
The researcher may well have expectations about the kind of issues likely to occur in the interviews. When some of these are absent, that fact may be highly significant. The absence of an anticipated topic should be explored to discover the correct explanation of its omission.

Method 7: Reconstruction of a Social Life-world
This method can be applied to the accounts of a number of people who have part of their lives in common, for example, a group of friends who go around together. The aim is to attempt some kind of reconstruction of the world which the participants share in analysing the fragmentary material obtained in an interview. The researcher seeks to understand the dominant modes or orienting to reality, the conceptions of purpose and the limits to what is perceived.

Method 8: Generating and Testing Hypotheses
New hypotheses may occur to the researcher during the analysis of the tape-recordings. It is possible to do more than simply advance these as a result of tentative impressions; one can loosely apply the hypothetico-deductive method to the data. This involves putting the hypothesis forward as clearly as possible, working out what the verifiable inferences from it would logically be, and testing these against the account data. Where these data are too fragmentary, the researcher may then consider what kind of evidence and method of obtaining it would be necessary for a more thorough hypothesis testing. Subsequent sets of interviews forming part of the same piece of research might then be used to obtain relevant data (Cohen and Manion, 1980: 194-196).

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Design of the Study

The goal of this study was to explore in-depth factors which influenced four first grade teachers' diagnostic decision-making. The study focused on the influence of personal and environmental factors on three areas related to teachers' selection and use of diagnostic procedures and information: (1) the teachers' selection among various diagnostic procedures; (2) their use of specific procedures; and (3) the weight (i.e., the importance and utility) which the teachers attributed to information derived from each of the procedures. The study had two purposes:

1. To develop generalizations about possible relationships among the personal and environmental factors investigated and the teachers' selection and use of diagnostic procedures and their weighting of information from these procedures; and
2. to develop hypotheses for further research.

The personal and environmental factors investigated were identified during a literature review and during the nine-month data collection phase.

The design of this exploratory field study employed the in-depth and interpretive focus of a multiple case study approach within naturalistic settings. In addition, the research utilized a multi-method approach emphasizing participant observation techniques, including direct observation, informant interviewing, and documentation. Specifically,

the basic design was a fixed multiple case studies investigation of two experimental groups (based on teacher belief systems) and no control groups utilizing repeated measures within a multi-method approach to identify differences among the groups rather than any effects of treatment.

Sample

The data for this study came from four first grade teachers currently teaching in schools in Western Massachusetts. Each of the schools was within a thirty-mile radius of Amherst, Massachusetts. All of the teachers were experienced teachers: their total years teaching in elementary schools equalled forty-six years, and the average number of years teaching first grade was eight years. For one teacher, however, this was her first year teaching this grade level. The remaining three teachers had taught first grade from seven to seventeen years. Three of the four teachers taught in self-contained first grade classrooms; one taught in a combined first and second grade classroom in which she was principally responsible for first grade reading instruction. Three of the four teachers had completed graduate course work leading to a M.Ed. or additional certification or both.

The teachers in the study were selected from a pool of volunteers because of their theoretical orientations to reading. Using Harste and Burke's (1977) and DeFord's (1979) descriptions and instruments, two teachers were initially identified as having a whole language orientation to reading and two teachers appeared to have decoding orientations.

Instruments

A broad range of instruments was used in the process of identifying potential influences on the teachers' diagnostic decision-making. These instruments included observation record sheets, Pupil Information Cards (Harste and Burke, 1977), the Theoretical Orientation to Reading Profile--TORP (DeFord, 1979), hypothetical situations, four surveys, teachers' records, and guided open-ended questions for four tape-recorded interviews. The study employed these diverse instruments for data collection in order to increase the probability that data gathered accurately reflected the viewpoints of the teachers and was not an artifact of any specific instrument used in the data collection.

Procedures

The collection of data occurred over a period of nine months in two phases. The first phase lasted approximately four months in the Spring and Summer of 1982 and involved gathering data from all of the instruments except the fourth survey, final interview and summary statements. During the first phase, each of the selected teachers was visited six to eight times. Approximately five visits involved some direct observation. All of the visits involved document collection and either informal discussion or taped interviews.

The second phase of data collection occurred in the Fall, 1982, after the initial data had been analyzed. During this phase, teachers were given the fourth survey and their responses were discussed during the

fourth tape-recorded interview. The focuses of this second phase of data collection were to clarify some of the inconsistencies in the data and to obtain an elaboration of the teachers' perceptions of factors influencing their diagnostic decisions. The second phase occurred in October and November, 1982, after each of the teachers had had an opportunity to instruct and diagnose a new group of first graders.

The data gathered and analyzed were structured by eight research questions. The first four research questions focused on patterns in the diagnostic decisions and identification of influencing factors. The next three research questions pertained to generalizations about possible relationships among the teachers' decisions and influencing factors. The final research question generated hypotheses for future research about the influence of the teachers' beliefs. These eight research questions are listed below.

1. What were the selected teachers' beliefs concerning (a) the processes of reading and of learning to read and (b) the appropriate role of diagnosis in beginning reading?
2. What patterns were observable in these teachers' selection and use of diagnostic procedures and their weighting of information from specific procedures?
3. What changes in their selection, their use and their weighting did the teachers report as occurring throughout the academic year and during

their years of teaching and diagnosing?

4. Which personal and environmental factors appeared to influence the teachers' selection, use, and weighting?
5. What generalizations about potential relationships among the teachers' theories of reading and the dimensions of diagnostic decision-making investigated (i.e., teachers' selection and use of procedures and weighting of diagnostic information) were drawn from the data gathered?
6. What generalizations about potential relationships among other personal and environmental factors and the teachers' selection, use, and weighting decisions were drawn from the data gathered?
7. What generalizations about potential relationships among the teachers' theories of reading and other personal and environmental factors were drawn from the data gathered?
8. What specific hypotheses for future research were derived from the generalizations concerning the influence of the teachers' theories of reading on their selection, use, and weighting decisions?

Table 2 points out the correspondence between data gathered research questions (1-4) and the data collection instruments.

Specific efforts were made in designing this study to address

TABLE 2

CORRESPONDENCE BETWEEN DATA COLLECTION INSTRUMENTS
AND THE DATA GATHERING RESEARCH QUESTIONS

Research Questions	Data Collection Instruments							
	TORF	Pupil Info. Cards	Surveys	Hypothetical Situations	Teacher Records	Observation	Interviews	Summary Statements
1. Identification of teachers' beliefs about reading, learning to read, diagnosis and beginning reading instruction.	X	X	X	X		X	X	X
2. Identification of teachers' selection and usage of diagnostic procedures and their weighing of information.		X	X	X	X	X	X	X
3. Identification of changes in the teachers' selection and usage of diagnostic procedures and their weighing of information.			X		X		X	
4. Identification of factors influencing the teachers' selection and usage of diagnostic procedures and their weighing of information.	X	X	X	X	X	X	X	

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the issues and concerns expressed by Guba (Note 2) about trustworthiness of data. Table 3 identifies the safeguards employed in the design of this study.

Previous papers (Sprang, 1969; Harste and Burke, 1977; Kamil, Note 4; and Stern and Shavelson, Note 5) and research studies (Biemiller, 1970; DeLawter, 1971, 1975; Weber, 1975; Barr, 1972, 1974; Mitchell, 1979, 1980; DeFord, 1981; Borko, Shavelson and Stern, 1981) have pointed to the influence of teachers' beliefs about reading on instructional and diagnostic decision-making. As a result, accurate determination of the teachers' theoretical belief systems in reading in this study was crucial for the development of meaningful generalizations about differences. Six procedures were utilized to ascertain the teachers' theories of reading and orientations to reading instruction. These procedures occurred during both phases of data gathering and are discussed below.

First, the teachers were interviewed, and the interview questions which each teacher was given ahead of time to think about focused on her description of the processes of reading and learning to read and reading instruction. The responses were compared to the description of the categories described by Harste and Burke (1977) and DeFord (1979).

Second, each teacher was administered the Theoretical Orientation to Reading Profile (TORP) instrument. DeFord suggested that a teacher's score on the TORP is a general indicator of the respondent's theoretical orientation.

Third, the teachers were given a set of Pupil Information Cards (Harste and Burke, 1977) which suggested three pupils' oral reading

TABLE 3

GUBA'S SAFEGUARDS WHICH WERE EMPLOYED IN THIS STUDY

Areas of Trustworthiness of Data in the Naturalistic Setting	Comparable Area of Trustworthiness of Data in the Scientific Paradigm	Safeguards Employed in this Study to Insure the Trustworthiness of the Data
Credibility	Internal Validity	- Use of Prolonged Engagement - Use of Methodological Triangulation - Use of Member Checks - Use of Peer Debriefing - Comparing and Contrasting Data for Inconsistencies and Themes
Fittingness	External Validity	- Use of Thick Description - Selection of Teachers Representing a Range of Theoretical Orientations to Reading
Dependability	Reliability	- Use of Pre-determined Interview Questions - Use of Independent Raters to Confirm the Accuracy of Identifying Teachers' Theoretical Orientations to Reading - Use of Overlapping Methods - Establishing an Audit Trail
Confirmability	Objectivity	- Use of Methodological Triangulation - Practicing Reflexivity by Intentionally Revealing the Purposes of the Study and Underlying Assumptions

Source: Adapted from Guba, Note 2

behaviors. Harste and Burke indicated that a teacher's selection of the best reader card from the three cards does effectively identify the teacher's theoretical position.

Fourth, each of the teacher's reading instruction was observed on four or more occasions in order to identify the learning strategies which the teacher encouraged, the size of the language unit principally emphasized by the teacher, and her reaction to the children's miscues (errors) during oral reading.

Fifth, the information concerning the teachers' orientations was synthesized and given to three independent raters for their review. Agreement with the preliminary judgment by two of these three raters was accepted as an accurate identification of the teacher's theoretical orientation.

Sixth, the teachers' own beliefs concerning their theoretical orientations were solicited in the fourth survey. In this survey, they were given the criteria for determining theoretical orientations and were asked to identify their theoretical orientation. These self reports were discussed briefly during the fourth and final interview.

Analysis of the Data

Information gathered in the course of this study was analyzed in an approach based on the "experience sampling method" developed by Kitwood (Note 3). These methods of analysis were described previously in Table 1. Table 4 suggests the correspondence between the eight research questions

TABLE 4

CORRESPONDENCE AMONG KITWOOD'S METHODS OF DATA ANALYSIS AND THE RESEARCH QUESTIONS

Research Questions in the Study	Kitwood's Methods of Data Analysis							
	Total Pattern of Choice	Similarities/ Differences	Grouping Items	Categorization of Items	Tracing Themes	Study of Omissions	Reconstructing a Social Life-World	Generating/ Testing Hypotheses
1. Identification of teachers' background and beliefs, and information about the school	X	X						
2. Identification of teachers' selection and use of diagnostic procedures and their weighting of information	X	X	X	X	X			
3. Identification of factors influencing the teachers' selection and use of diagnostic procedures and their weighting of information	X	X	X	X	X	X		
4. Identification of changes in the teachers' selection and use of diagnostic procedures and their weighting of information	X	X	X	X	X	X		
5. Possible relationships among teachers' theories of reading and their selection and use of diagnostic procedures and their weighting of information	X	X	X	X	X	X		
6. Possible relationships among other factors and the teachers' selection and use of diagnostic procedures and their weighting of information	X	X	X	X	X	X		
7. Possible relationships among the teachers' theories of reading and other influencing factors	X	X	X	X	X	X		
8. Hypotheses for future testing on the influence of teachers' theories of reading on diagnostic decisions								X

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of this study and Kitwood's methods of data analysis. The data analysis procedures involved the application of various methods (from two to six methods) of data analysis described by Kitwood to each of the first seven research questions of the study. A single method of analysis was used for the last research question. Several examples of this application of Kitwood's method of analysis are provided to clarify the data analysis process employed in this study.

For Research Question Number One, all of the information about the teachers' backgrounds and beliefs about reading and diagnosis was grouped together in order to make generalizations about the participants as a group. After this analysis of the total pattern, investigation was made of the similarities and differences of the teachers' beliefs. The analysis included a grouping of the teachers by patterns of similar beliefs about reading, learning to read and reading instruction.

For Research Question Number Two, the analysis was divided into three distinct topic areas: the teachers' selection among various diagnostic procedures, their use of specific procedures, and their weighting of information from the procedures which they use. Each of Kitwood's methods of data analysis was applied to each of these three topic areas. For example, the total pattern of the teachers' selection was analyzed to identify the procedures which all of the teachers favored and those which they all disliked. Then, the differences and similarities among the teachers' selection were investigated according to teachers grouped by theoretical orientation. At this point, some categories of diagnostic procedures were grouped together

for analysis of the teachers' selection of those categories of procedures (for example, informal reading inventories, standardized tests). Identification of themes in this topic area pertaining to potential influences on the teachers' selection became the basis of further data collection and later data analysis. The analysis of the other two topic areas in Research Question Number Two (use of procedures and weighting of diagnostic information) followed a similar pattern as the one described above.

For Research Questions Number Three through Seven, the pattern of analysis was similar, with one notable exception. In these questions, themes about the potential influences of theories of reading and other potential influences such as control, planning time, scheduling, teacher experiences with procedures, administration's policies, and teacher involvement in decision-making were more intensively investigated. Other patterns of influencing factors were noted and analyzed. The themes were traced and the omission of factors probed in questions to the teachers in order to develop the generalizations about the relationships described in Research Questions Number Five, Six and Seven.

Use of these methods in analyzing the data required some analysis to occur during data collection as well as afterwards in order to clarify the meaning of events observed and comments made by the teachers. There were, therefore, two stages of the analysis. The preliminary analysis occurred during the data gathering and this analysis was used to suggest themes, relationships and hypotheses, as well as factors or relationships which needed clarification through additional data

collection. The final analysis occurred after the researcher completed the data collection. Use of these methods of data analysis required that the researcher analyze the data from each source from the perspective of each research question.

Because of the small sample in this study, the presentation of the data was descriptive. Results of the analysis of data pertaining to each research question were discussed as patterns with examples of teacher behaviors or statements and the frequency of these behaviors or statements included for documentation. Measures of central tendency were computed for some of the data pertaining to Research Questions Number One, Two and Three. Other statistical tools were not employed in reporting the results of this exploratory investigation.

Discussion

The multiple case study, multi-method design is very effective for the study of teachers' decision-making. In this study, it provided rich data on teachers' diagnostic decisions and underlying influences. Thirty-four personal and environmental factors which influence teachers' decision-making were identified in thick description, and numerous generalizations about interactions among these factors and hypotheses for further research were posited. The process of decision-making itself was illuminated; it appears to have elements of the creative thinking process described by Ghiselin (1952) since the teachers vacillate between rational thinking and intuitive processes in a manner similar to that

described by Parnes and Biondi (1975) as a creative balance. In addition, a theoretical base of instructional decision-making was clarified while no theoretical base for diagnostic decisions was identified.

One major strength of this design is that the data represents the teachers' perspective, yet with application of Guba's (Note 2) safeguards, the trustworthiness of the data is reasonably assured. The teachers were ideosyncratic in the decision-making and required time and space to formulate their thoughts on a process which they had not frequently considered seriously. When provided with opportunities to contemplate, the quality of the data in reference to its richness improved dramatically. However, the teachers required support which increased potential problems of subjective interaction. Employment of the safeguards reduced the potential for bias.

This design provides a viable mechanism for analyzing the voluminous amounts of data generated in a multiple case study design. Kitwood's (Note 3) method of analysis provided a system of alternating analysis and recategorization of the data which clarified patterns within the data while pointing to areas needing further investigation.

In addition, the multi-method, multiple case study design appears to be philosophically consistent with the paradigm of studying teachers as professional decision-makers. It allows for the teachers' active participation in the study. They have opportunities to assist in the development of instruments and procedures for gathering the data and opportunities to assess the accuracy of the representation. The extent of involvement and cooperation of the teachers in this study expanded

as the teachers became aware of their potential for involvement and the mutual accountability.

With this method the teachers decision-making is investigated in a naturalistic setting. The decisions investigated are those made by teachers about students in their classes not about simulated case histories. The process of decision-making is explored as it evolves. The opportunities for perception of unsuspected factors, characteristics and relationships are far greater than in controlled studies. At this stage of our understanding of teacher decision-making, more studies of this exploratory nature are needed to clarify the teacher decision-making process and prevent misconceptions.

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